

Applicant(s): Douglas LeCrone  
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E30-052 (00-198)

In the Claims

Please amend claims 1 through 10, 12 14, 17 and 18 as follows:

1 (amended). A method for enabling a processor that directs I/O requests over a first communications channel to a first plurality of logical devices [and] during normal operations to switch and direct I/O requests over a second channel to a second plurality of logical devices normally operating as a mirror of the first plurality of logical devices [wherein] and each of the plurality of logical devices has an identifying control block [and the processor] and I/O requests normally [are] being processed using control blocks for the first plurality of logical devices, said method being responsive to a swap command to direct I/O requests to an identified logical device over the second channel and comprising the steps of:

- A) determining, during normal operations, an operating validity of both the first and second pluralities of logical devices, and
- B) [initiating] performing an address switch by:
- i) verifying the operating validity of the logical devices in the first and second pluralities of logical devices corresponding to the identified logical device based upon the step of

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determining operating validity during normal  
operations, and

- 25 ii) [exchanging] in response to a successful  
verification, blocking I/O requests to the  
identified logical device to enable the exchange  
of the information in each control block  
associated with the logical devices  
corresponding to the identified logical device  
30 in the first [plurality] and second pluralities  
of logical devices [with the information in each  
control block associated with the second  
plurality of logical devices], said blocking  
being terminated after the exchange whereby  
35 subsequent processor I/O requests to the  
identified logical device are directed to the  
corresponding logical device in the second  
plurality of logical devices.

- 2 (amended). A method as recited in claim 1 wherein said  
determination of operating validity of the first and  
second pluralities of logical devices occurs  
asynchronously and independently of said exchange of  
5 control block information for the identified logical  
device.

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3 (amended). A method as recited in claim 2 wherein said  
determination of operating validity of the first and  
second pluralities of logical devices is made periodically  
prior to said performing of said address switch with the  
5 identified logical device.

4 (amended). A method as recited in claim 2 wherein the  
processor and logical devices can operate with different  
configurations and wherein said determination [responds]  
of operating validity occurs in response to a change in a  
5 configuration.

5 (amended). A method as recited in claim 2 wherein the  
processor and logical devices can operate in different  
operating modes, and wherein said determination [responds]  
of operating validity occurs in response to [the] a  
5 selected operating mode of the process with the first  
plurality of logical devices.

6 (amended). A method as recited in claim 2 wherein said  
determination includes a determination of operating  
validity for each of the first plurality of logical

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5 devices and the corresponding logical device in the second  
plurality of logical devices.

7 (amended). A method as recited in claim 6 wherein a data  
structure includes a validity flag for each of the first  
plurality of logical devices and its corresponding one of  
the second plurality of logical devices and wherein said  
5 determination of operating validity sets the corresponding  
validity flag.

8 (amended). A method as recited in claim 7 wherein the swap  
command identifies at least one logical device and said  
blocking of I/O requests occurs with respect all of the  
identified logical devices in the first plurality of  
5 logical devices during the exchange of information [occurs  
while all the logical devices have been blocked for  
responding to any I/O request], said [block being  
released] unblocking occurring after all the exchanges are  
made whereby the redirection of processor I/O requests to  
10 the second plurality of logical devices occur essentially  
simultaneously thereby to produce a consistent transfer.

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9 (amended). A method as recited in claim 7 wherein said  
exchange includes, for each identified logical device, the  
steps of:

- i) selecting a single logical device in the first  
5 plurality of logical devices,
- ii) blocking access to [that] the selected logical  
device,
- iii) and thereafter exchanging the information in  
each control block associated with the selected  
10 [one of the first plurality of logical devices]  
logical device and the corresponding [of]  
logical device in the second plurality of  
logical devices; and
- iv) unblocking access to the selected logical  
15 [devices] device.

10 (amended). Apparatus for enabling a processor that directs  
I/O requests over a first communications channel to a  
first plurality of logical devices and to switch and  
direct I/O requests over a second channel to a second  
5 plurality of logical devices normally operating as a  
mirror of the first plurality of logical devices in  
response to a swap command that identifies a logical  
device in the first plurality of logical devices wherein

each of the plurality of logical devices has an  
10 identifying control block and the processor I/O requests  
normally are processed using control blocks for the first  
plurality of logical devices, said [method] apparatus  
comprising:

A) means for determining, during normal operations, an  
15 operating validity of the first and second  
pluralities of logical devices,

B) means for initiating an address switch including:

i) means for verifying the operating validity of  
the logical devices in the first and second  
20 pluralities of logical devices corresponding to  
the identified logical device, and

ii) means responsive to the verification for  
[exchanging] blocking I/O requests to the  
identified logical device to enable the exchange  
25 of the information in each control block  
associated with the logical devices in the first  
[plurality] and second pluralities of logical  
devices [with the information in each control  
block associated with the second plurality of  
30 logical devices] corresponding to the identified  
logical device, said blocking being terminated  
when the exchange is complete whereby subsequent

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processor I/O requests with the identified  
logical device are directed to the corresponding  
logical device in the second plurality of  
logical devices.

11 (original). Apparatus as recited in claim 10 additionally  
comprising means for activating said determination means  
asynchronously and independently of the operation of said  
exchange means.

12 (amended). Apparatus as recited in claim 11 additionally  
comprising means for activating said determination  
periodically prior to the operation of said address  
switching means.

13 (original). Apparatus as recited in claim 11 wherein the  
processor and logical devices can operate with different  
configurations and wherein said apparatus additionally  
comprises means for activating said determination means in  
response to a configuration change.

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14 (amended). Apparatus as recited in claim 11 wherein the  
processor and logical devices can operate in different  
operating modes, and wherein said apparatus additionally

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comprises means for activating said determination means in  
5 response to [the] a selected operating mode of the process  
with the first plurality of logical devices.

15 (original). Apparatus as recited in claim 11 wherein said  
determination means includes means for determining the  
validity for each of the first plurality of logical  
devices and the corresponding logical device in the second  
5 plurality of logical devices.

16 (original). Apparatus as recited in claim 15 additionally  
comprising a data structure including a validity flag for  
each of the first plurality of logical devices and its  
corresponding one of the second plurality of logical  
5 devices, said determination means sets the corresponding  
validity flag if valid operating conditions exist.

17 (amended). Apparatus as recited in claim 16 wherein the  
swap command identifies at least one logical device, said  
apparatus additionally comprising means for blocking  
access to all the identified logical devices before the  
5 information exchanges and means for releasing said  
blocking means after all the exchanges are made whereby  
the redirection of processor I/O requests to the second



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plurality of logical devices occur essentially  
simultaneously and consistently.

18 (amended). Apparatus as recited in claim 16 wherein said  
exchange means includes:

- i) means for selecting a single logical device in  
the first plurality of logical devices,
- ii) means for blocking access to [that] selected  
logical device, said exchange means being  
activated in response to said blocking means,  
and
- iii) means for releasing said unblocking means.

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